

**INFORMATION SYSTEMS PLANNING REPORT  
DISCRETE MANUFACTURING SECTOR**

**NOVEMBER 1986**



INFORMATION SYSTEMS PLANNING REPORT  
DISCRETE MANUFACTURING SECTOR

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INFORMATION SYSTEMS PLANNING REPORT  
DISCRETE MANUFACTURING SECTOR

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## I MAJOR ISSUES

### A. DRIVING FORCES

- Discrete manufacturers are facing a continuing threat from foreign competition. To avert this threat, manufacturers are viewing technology as the major vehicle for reducing costs while producing quality, competitive products.
- With product life cycles becoming shorter, product design and implementation cycles must also be shortened to remain competitive.
- Mature markets combined with the slow growth of the economy have increased manufacturers' demands for automation.
- Exhibit I-1 summarizes the driving forces for the discrete manufacturing sector.

### B. ISSUES AND OBJECTIVES

- Productivity improvement is the major goal for manufacturers. The entire product development cycle--from planning to development to marketing--has been slated by manufacturers for automation.





**EXHIBIT I-1**

**DISCRETE MANUFACTURING  
DRIVING FORCES**

- **Manufacturing Costs**
- **Foreign Competition**
- **Mature Markets**
- **Slow Growth of the Economy**



- Manufacturers are moving away from the older technology of standalone automation and toward computer-integrated manufacturing (CIM), where the process of making business decisions is integrated with the actual manufacturing processes.
- IS managers are attempting to show senior management the true potential impact that information systems can have on the organization. This requires:
  - Management realization that information systems are not just automation of manual functions but a means to achieve corporate goals.
  - IS becoming part of the corporate planning process.
  - Increased corporate IS visibility.
- Manufacturers are examining electronic document interchange (EDI) to reduce the ever increasing burden of office paperwork. Goals include linking vendors, distributors, and customers to achieve a near paperless work environment.
- Exhibit I-2 describes the issues and objectives for the discrete manufacturing sector.

### C. IMPACT OF NEW TECHNOLOGY

- End-user computing is continuing to have a large impact on organizations. Microcomputer hardware and software purchases and the education and training of users are now taking up a sizable part of corporate IS resources.
- Historically, computer systems in the manufacturing environment have been built on the foundation of existing systems, without regard to future integration. Now the need to plan for the future's requirements is becoming evident,

Handwritten text, likely a letter or document, written in cursive script. The text is extremely faded and illegible due to the quality of the scan. It appears to be a formal document, possibly a letter of introduction or a business correspondence, given the structure and the use of capital letters at the beginning of lines.

**EXHIBIT I-2**

**DISCRETE MANUFACTURING  
ISSUES AND OBJECTIVES**

- **Product Development Automation**
- **Computer-Integrated Manufacturing**
- **Electronic Data Interchange**
  - **Vendors**
  - **Distributors**
  - **Customers**



and corporations will need to make the necessary changes to bring about an orderly and complete transition from older technology to new.

- Communication between computers has become a major requirement of the IS department.
  - A typical manufacturing environment includes multivendor hardware. IS departments report difficulties in connecting different hardware to each other or to a network. Surprisingly, communications between machines of the same vendor also have this problem.
  - Micro-to-micro connections, as well as micro-to-mainframe links, have recently emerged as major system software products. These types of products are imperative as management must have access to the most accurate and timely information available on whatever computer hardware the information resides.
- Exhibit I-3 summarizes the impact of new technology on discrete manufacturers.





**EXHIBIT I-3**

**DISCRETE MANUFACTURING  
IMPACT OF NEW TECHNOLOGY**

- **End-User Computing**
- **Integration**
- **Communications**
  - **Micro-to-Micro**
  - **Micro-to-Mainframe**
  - **Intervendor**
  - **Intravendor**

III-DM-6



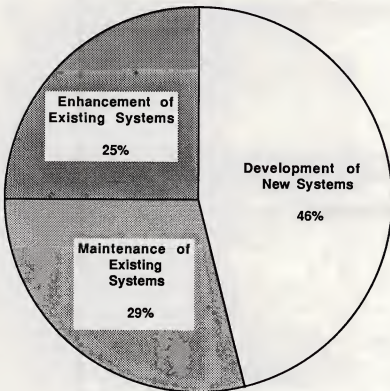
## II NEW APPLICATIONS

- Application development in this sector is primarily done by internal IS staff.
- Exhibit II-1 reports that over 70% of IS departments' application development staff is being used to enhance currently existing systems and to develop new systems.
  - Packaged software typically does not meet a manufacturer's needs.
  - Internal IS staff must modify and integrate packaged software into their own unique manufacturing environment.
- To allow management instant access to company information, centralizing the organization's financial and accounting systems has become mandatory.
- Computer-integrated manufacturing (CIM) will continue to be a high priority for manufacturers.
  - Many large manufacturers have already adopted CIM strategies.
  - Medium-sized manufacturers are taking a cautious approach, due to the financial resources and staff requirements needed to implement systems that can be integrated under a CIM architecture.



**EXHIBIT II-1**

**DISCRETE MANUFACTURING  
ASSIGNMENT OF INTERNAL APPLICATION  
DEVELOPMENT STAFF**



III-DM-8



- Small manufacturers see the benefits of integration and are waiting for this technology to become more affordable.
- Discrete manufacturers have acknowledged that manufacturing resource planning systems (MRP II) will provide benefits in:
  - Computer software, which is used to track orders and materials from vendor, to the storeroom, to the factory floor, and finally to the customer.
  - New business procedures, which address product forecasting, scheduling, and production planning.
  - Analysis of existing hardware systems, which could lead to a change in the organization's actual manufacturing operations.
- Important applications for the discrete manufacturing sector are listed in Exhibit II-2.





**EXHIBIT II-2**

**DISCRETE MANUFACTURING  
IMPORTANT APPLICATIONS**

- **Centralized Financial and Accounting**
- **Computer-Integrated Manufacturing**
- **Manufacturing Resource Planning**



### III BUDGET ANALYSIS

- Exhibit III-1 shows the 1986 budget distribution and the projected budget growth for 1987.
- The largest budget growth areas are in computer hardware, highlighting discrete manufacturers' commitment to having the hardware or foundation needed to implement their automation plans.
  - Mainframe processors, 10.9% growth.
  - Minicomputers, 11.2% growth.
  - Microcomputers, 10.7% growth.
- Professional services is the only category expected to decline, reflecting the emphasis manufacturers are increasingly placing on internal resources to solve data processing problems.
- Showing the need and importance networks will have in manufacturers' future, IS is budgeting over 10% to data communications.
- Exhibit III-2 shows that over 80% of respondents believe that their IS budgets will increase or remain the same for 1987.



**EXHIBIT III-1**

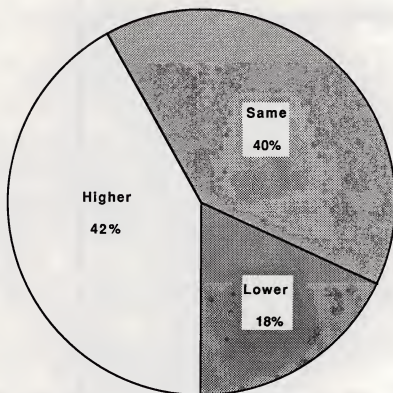
**1986 BUDGET DISTRIBUTION AND 1986/1987 CHANGES  
IN THE DISCRETE MANUFACTURING SECTOR**

<b>BUDGET CATEGORY</b>	<b>1986 PERCENT OF I.S. BUDGET</b>	<b>1986/1987 EXPECTED BUDGET GROWTH</b>
<b>Personnel Salaries and Fringes</b>	<b>45.5%</b>	<b>5.4%</b>
<b>Mainframe Processors</b>	<b>7.0%</b>	<b>10.9%</b>
<b>Minicomputers</b>	<b>3.9%</b>	<b>11.2%</b>
<b>Microcomputers</b>	<b>3.7%</b>	<b>10.7%</b>
<b>Mass Storage Devices</b>	<b>2.1%</b>	<b>7.6%</b>
<b>Other Hardware</b>	<b>7.5%</b>	<b>4.0%</b>
<b>Total Hardware</b>	<b>24.2%</b>	<b>8.5%</b>
<b>Data Communications</b>	<b>10.5%</b>	<b>4.6%</b>
<b>External Software</b>	<b>5.4%</b>	<b>5.2%</b>
<b>Professional Services</b>	<b>2.9%</b>	<b>(2.5%)</b>
<b>Software Maintenance</b>	<b>2.3%</b>	<b>1.5%</b>
<b>Hardware Maintenance</b>	<b>7.0%</b>	<b>8.7%</b>
<b>Other</b>	<b>2.2%</b>	<b>10.0%</b>
<b>Total</b>	<b>100.0%</b>	<b>6.1%</b>



**EXHIBIT III-2**

**DISCRETE MANUFACTURING  
BUDGETS WILL INCREASE OR REMAIN THE SAME**



**Percent of All Respondents**





- Factors contributing to the increase in the 1987 IS budgets were:
  - . Hardware.
  - . Personnel expense.
  - . Hardware maintenance costs.
- Factors contributing toward decreasing the IS budget were:
  - . Poor revenue outlook.
  - . Improved hardware and software price performance.
  - . Management demands for cost cutting.

